AMENDMENT UNDER 37 C.F.R. § 1.116 Attorney Docket No: Q78224

U.S. Application No.: 10/700,635

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the

application:

LISTING OF CLAIMS:

Claim 1. (canceled).

2. (currently amended): The process according to elaim 1claim 9, wherein the

tetracarboxylic dianhydride contains a fluorine atom.

3. (currently amended): The process according to claim 1 claim 9, wherein the diamine

contains a fluorine atom.

4. (currently amended): The process according to claim 1 claim 9, wherein the 1,4-

dihydropyridine derivative represented by formula (I) is selected from the group consisting of 1-

ethyl-3,5-dimethoxycarbonyl-4-(2-nitrophenyl)-1,4-dihydropyridine, 1-methyl-3,5-

dimethoxycarbonyl-4-(2-nitrophenyl)-1,4-dihydropyridine, 1-propyl-3,5-dimethoxycarbonyl-4-(2-

nitrophenyl)-1,4-dihydropyridine and 1-propyl-3,5-diethoxycarbonyl-4-(2-nitrophenyl)-1,4-

dihydropyridine.

5. (currently amended): The process according to claim 4, wherein the 1,4-

dihydropyridine derivative represented by formula (I) comprises 1-ethyl-3,5-dimethoxycarbonyl-

4-(2-nitrophenyl)-1,4-dihydropyridine.

Claim 6. (canceled).

7. (currently amended): The process according to claim 6claim 9, wherein the pulse

width is 10×10^{-15} to 500×10^{-15} second.

2

Attorney Docket No: Q78224

AMENDMENT UNDER 37 C.F.R. § 1.116 U.S. Application No.: 10/700,635

- 8. (currently amended): The process according to claim $\frac{9}{10^{-15}}$ wherein the pulse width is about $\frac{50 \times 10^{-15}}{10^{-15}}$ to about $\frac{300 \times 10^{-15}}{10^{-15}}$ second.
- 9. (previously presented): A process for producing a three-dimensional polyimide optical waveguide, which comprises:
- (I) irradiating a polyamic acid film with a laser beam while converging the laser beam at an inside portion of the film and relatively moving the light convergence point, the polyamic acid film containing:
 - (a) a polyamic acid obtained from a tetracarboxylic dianhydride and a diamine; and
- (b) per 100 parts of the polyamic acid, from 0.5 part by weight to less than 10 parts by weight of a 1,4-dihydropyridine derivative represented by formula (I):

$$R_5OOC$$
 R_3
 R_1
 R_2
 R_2
 R_1
 R_2
 R_3

wherein Ar represents an aromatic group having a nitro group at an ortho-position with respect to the bonding position to the 1,4-dihydropyridine ring; R_1 represents a hydrogen atom or an alkyl group having 1 to 3 carbon atoms; and R_2 , R_3 , R_4 and R_5 each independently represents a hydrogen atom or an alkyl group having 1 or 2 carbon atoms, and then,

(II) heating the polyamic acid film to imidize the polyamic acid, thereby obtaining an optical waveguide having a continuous core region where the refraction index has been changed, in the thus formed polyimide film,

AMENDMENT UNDER 37 C.F.R. § 1.116

U.S. Application No.: 10/700,635

Attorney Docket No: Q78224

wherein the laser beam is a pulse laser having a pulse width of 10^{-15} to 10^{-12} second and the pulse laser has a repeating frequency of from 1 Hz to 80 MHz.

- 10. (original): The process according to claim 9, wherein the repeating frequency is from 10 Hz to 500 kHz.
- 11. (currently amended): The process according to claim 6claim 9, wherein the irradiation of the pulse laser is carried out at an irradiation energy of from 1 to 500 mW.
- 12. (original): The process according to claim 11, wherein the irradiation energy of the pulse laser is from 10 to 100 mW.
- 13. (currently amended): The process according to claim 1 claim 9, wherein an irradiated site of the polyamic <u>acid</u> film has a refraction index greater than that of a non-irradiated site of the polyamic film.
- 14. (currently amended): The process according to claim 1 claim 9, wherein irradiation changes the refraction index of the polyamic <u>acid</u> film.